DELAWARE RIVERKEEPER®
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Program Manager
DNREC-SIRB
391 Lukens Drive
New Castle, DE 19720

Re: Report by Schnabel Engineering, "Hay Road Sludge Drying Site, Cherry Island, Wilmington, DE", dated 12.20.06 Schnabel Reference 06150049

Dear Dr. Salahuddin,

Delaware Riverkeeper Network submits this comment concerning the above referenced report concerning storage/disposal of dredge and sludge spoils near the Delaware River at Dupont's Hay Road site in Wilmington, Delaware.

Delaware Riverkeeper Network is very concerned about the spoils (i.e. sludge, "iron rich material" or IRM) material stored at the site, the dredged material on the site, and the impacts of these on the ground and surface waters of Shellpot Creek, the Delaware River and its Watershed.

According to the report the dredged material, which Dupont has proposed remain on site underneath the pile of spoils (IRM), is not sufficiently characterized. Further, this material contains mobile contaminants that have already moved down gradient, including iron, manganese, and hexachlorobenzene, according to the report. The dredged material needs to be characterized, removed and disposed of in a manner that does not cause additional pollution; existing pollution from the dredged material needs to be remediated.

The report also concludes that the groundwater under the spoils (IRM) pile site has not been sufficiently characterized; monitoring wells have not been properly located in the pile or down gradient. Groundwater monitoring wells and sites need to be located strategically to gather needed information about groundwater quality underlying the site. The report points out that Dupont's conclusion that much of the groundwater contamination is caused by the dredged material may not be correct considering that the concentrations of iron and manganese in the sampled dredged material are about twice as high as levels detected at other dredge storage sites along the Delaware River. The report suggests that the elevated levels of these and other pollutants such as chloride may be caused by Dupont's spoils (IRM) material. Some of

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the most dangerous chemicals, such as hexachlorobutadiene, have not even been tested for. It is critical that all contaminants be identified and tested for throughout the site and in the groundwater and that these pollutants are removed from the groundwater.

The report concludes that the spoils (IRM) pile itself has not been sufficiently characterized and is therefore an unknown quantity in terms of how to handle and how to dispose. An accurate characterization is needed in order to understand potential pollution and pathways (including stormwater runoff) that the pollution can take – such as air, ground and surface water. The presence of PCB's, radioactive materials, heavy metals and dioxins, for instance, is not clearly quantified or characterized by Dupont, according to Schnabel. This basic data is key to developing a disposal and remediation/clean up plan that will protect ground and surface waters and, by extension, public health and the environment and living resources of the Delaware River, its tributaries and its Watershed.

The report concludes that site characterization data is not sufficient to form the basis of human health and ecological risk assessments, modeling analyses and remedial action. The report goes on to criticize the lack of any assessment of off site downwind impacts and the lack of analysis of direct exposure of contaminants to wildlife, including birds, which use the area for habitat. Also missing is an analysis of current leaching and possible migration of pollutants to other water bodies, including the Delaware River and Shellpot Creek, and those impacts on people and wildlife, including fish. Sampling and analyses of material from the spoils (IRM) pile and the areas adjacent is necessary in order to provide meaningful data to form the basis of required risk assessments, modeling analyses and remedial action by Dupont.

The report notes that the site is characterized by Dupont as outside of the 100 year floodplain but also notes the presence of a "topographic low in the berm separating the site from the Delaware River…" (page 4) concluding that the potential for flooding of the site needs to be assessed based on site-specific information rather than FEMA maps. Delaware Riverkeeper Network supports this requirement. We point out that the report also mentions the lack of analysis of storm surges on the site and we urge that DENREC require an analysis of both this and sea level rise impacts over the coming decades as part of a flooding analysis of the site.

The report unequivocally rejects Dupont's remedial plans for the site, calling them "deficient"; Dupont's review does not meet DENREC's "Focused Feasibility Study" requirements for many reasons. Schnabel reports that DENREC's required process which allows for the use of a Focused Feasibility Study instead of a normal (more comprehensive and broad) feasibility study does not seem to have been followed. Also found deficient is the lack of groundwater monitoring and corrective remediation. For example -- it is astounding that Dupont proposes to allow hexachlorobenzene (HCB) to remain undiluted and uncontained. Mistakes made by Dupont such as not using the correct property data for HCB, including using the wrong detection limit and incorrect occurrence estimates, are damning. The pollution that would be left after Dupont's proposed efforts would endanger public health and the environment.

Dupont proposes to cap the pile and leave it on site, covering the dredged materials. The report finds that Dupont "overstates the design life of capping systems" (page 3, executive summary). According to Schnabel, Dupont incorrectly calculated the performance of a geomembrane for capping by an order of magnitude: at hearings and in their June 2005 letter, Dupont claimed a life of 270 to 450 years when it should be 27 years to 45 years, based on reduction factors or 25 years based on scientific literature (page 12). The Schnabel Report also expresses no confidence in the longevity or durability of the proposed use of a geosynthetic clay liner, pointing out that heavy metals may react with the liner and scientific

literature expresses growing concern as to their effectiveness. Further, the report criticizes Dupont's analysis of removal of the spoils (IRM) pile, stating that it was not adequately studied. The use of rail for removing the materials was specifically mentioned as a possible transport solution.

Delaware Riverkeeper Network (DRN) strongly urges DNREC to:

✓ Require that the spoils (IRM) pile be removed from this site by Dupont and that the dredged material also be removed.
✓Require sufficient data collection be done to find out what is in the dredge material and the spoils (IRM) pile.
✓Require ground and surface water monitoring and modeling be done to assess pollution to the area and migration of contaminants from the site.
✓Assess the impacts of the chemicals on people and wildlife.

This information is needed to decide how to safely dispose of the materials and how to effectively isolate, clean up and restore this site, which is situated at a critically important natural location near the Delaware River and Shellpot Creek and, being within the city limits of Wilmington, in proximity to vulnerable communities.

However, Delaware Riverkeeper Network does not support simply doing more studies. The known presence of "constituents of concern" as per USEPA's groundwater risk assessment guidelines, (page 5) such as hexachlorobenzene and other pollutants including dioxins and the evidence that these may be becoming more dangerous as they sit in the pile and may be spreading uncontrolled into the ground and surface waters, air and wildlife is nothing short of alarming. Considering the fact that in 2001 DNREC ordered this illegally placed stockpile removed by Dupont and considering the deficiency of Dupont's existing assessments and proposed actions, DNREC should order removal of this contaminated waste by Dupont as quickly as possible. DNREC should not even entertain Dupont's proposal to leave this pile on site. While it is true that the risk of contamination to human communities and the flora and fauna of the Delaware River, its tributaries and Watershed and the region must be fully understood in order to allow us to stop the pollution that has already escaped to the environment and to eliminate the risk of exposure, this information is not necessary in order for us to know that this stockpile is a danger to our environment and our communities and needs to be cleaned up, immediately, to the greatest extent possible.

While Delaware Riverkeeper Network agrees that well-designed monitoring and analysis of what is on site in order to understand the nature and extent of the pollution and in order to prevent further pollution is needed we do not believe Dupont can be trusted to carry out this work. They have had since 2001 to address this monumental pollution problem and have failed to do so – not only have they failed to supply the needed study and understanding but they have proposed ineffective remediation based on their insufficient information – data criticized by Schnabel as secondhand, shoddy and disorganized. Independent review by Schnabel Engineering has proven, based on standard engineering principles, that Dupont is either unwilling or incapable of addressing the situation. Monitoring and data collection characterizing the dredged material and spoils (IRM) pile should be immediately carried out by DNREC, EPA or independent engineers at Dupont's expense. This information is critical for informing how the agency handles, transports and disposes of the waste. Removal and remediation, likewise, should be paid for by Dupont but carried out by independent professionals/agencies.

Dupont's spoils (IRM) pile at the Hay Road Sludge Drying Site may be the nation's largest collection of contaminants resulting from Dupont's manufacture of pigment, including titanium dioxide. The collection of chemicals that result from Dupont's pigment manufacture is a formidable challenge to clean up; not the least of these is the deadly poison dioxin. Action must be taken to remove this pile, which never should have been placed along the Delaware River in the first place and certainly should not be allowed to remain there, leaking toxins.

Delaware Riverkeeper Network submits this comment on behalf of our members in Delaware and the affected communities and environment. The Delaware Riverkeeper is the voice of the Delaware River and its streams, championing their rights as living members of our community, and is leader for the Delaware Riverkeeper Network. The Delaware Riverkeeper and the Delaware Riverkeeper Network stand as vigilant protectors and defenders of the River, its tributaries and its watershed committed to restoring the natural balance where it has been lost and ensuring its preservation where it still exists.

Yours sincerely,

Maya K. van Rossum
the Delaware Riverkeeper

Tracy Carluccio
Deputy Director

CC: Delaware Governor Ruth Ann Minner
DENREC Secretary John E. Hughes
New Castle County
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